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KAUAI COMMUNITY COLLEGE, SITE SELECTION REPORT.

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HAWAII UNIV., HONOLULU

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THIS STUDY WAS UNDERTAKEN TO AID IN THE SELECTION OF A MORE SUITABLE SITE FOR THE KAUAI COMMUNITY COLLEGE. FOURTEEN SITES FULFILLED THE GENERAL SIZE, ENVIRONMENT AND ADATABILITY REQUIREMENTS. THE SCREENING CRITERIA APPLIED TO THESE SITES WERE ACCESSIBILITY, ENVIRONMENT, ECONOMY IN DEVELOPMENT, AND POSSIBILITY FOR FUTURE EXPANSION. THE RECOMMENDED SITE, ALTERNATE SITE AND THE ADVANTAGES OF THE SELECTED SITE ARE GIVEN ALONG WITH AERIAL PHOTOS AND ENROLLMENT PROJECTIONS. PARTICULAR ATTENTION IS GIVEN TO SITE SELECTION DATA REGARDING PROXIMITY TO POPULATION, SITE DEVELOPMENT COSTS AND FACILITIES EXPANSION POTENTIAL. (HH)

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KAUAI COMMUNITY COLLEGE

SITE SELECTION REPORT

COMMUNITY COLLEGE SYSTEM
UNIVERSITY OF HAWAII
HONOLULU, HAWAII
1966

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
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KAUAI COMMUNITY COLLEGE

SITE SELECTION REPORT

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May, 1966

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INTRODUCTION

In 1963, at the request of the State Legislature, a study was conducted by the University of Hawaii to determine the feasibility of establishing a statewide community college system.* In 1964, the Legislature passed the Community College Act, authorizing the University to establish community colleges on the islands of Oahu, Maui and Kauai. The administration of the existing post-secondary technical schools was transferred to the University, and these institutions were to constitute the core of the system. Also in 1964, an academic development plan for the entire system was suggested.**

In 1965, the Legislature appropriated funds for the initial planning and construction of portions of the physical plant of the Kauai Community College. With this authorization, the feasibility study of 1964, and the academic development plan of 1964, a comprehensive physical development program was initiated for the Kauai Community College.

During the preliminary studies, it was found that the campus of the Kauai Technical School was inadequate as the site of the Kauai Community College. The technical school campus, a rectangular parcel of 11.2 acres, bounded on the east by Kauai High School, on the west by Theo. H. Davies & Company, Limited, and Hawaiian Telephone Company properties, and on the north and south by major traffic routes, was too small and its location eliminated the possibility of expansion. Furthermore, there were plans to enlarge the campus of the Kauai High School, eliminating the possibility of encroachment upon those public lands.

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* Richard H. Kosaki, Feasibility of Community Colleges in Hawaii, University of Hawaii, Honolulu, Hawaii, 1964.

** Norman C. Harris, Curriculum Development for Hawaii's Community Colleges, University of Hawaii, Honolulu, Hawaii, 1964.

This study was subsequently initiated to aid in the selection of a more suitable site for the Kauai Community College. Robert Bush, A.I.P., was engaged to prepare a report containing pertinent background data and an evaluation of several alternative sites. The final site recommendations for the Kauai Community College were made by the Community College System staff.

CHAPTER I

BASIC REQUIREMENTS FOR THE CAMPUS

The physical requirements of the proposed campus should be directly related to its educational program requirements. This chapter summarizes the following key elements:

Educational Program:	A comprehensive community college educational program.
Enrollment:	Initially, 300 in 1968; rising to 500-550 in 1975.
Campus land area requirement:	40-50 acres.

A. EDUCATIONAL PROGRAM

The Kauai Community College will offer four types of educational programs:

1. An academic or college-transfer program.
2. Occupational (technical-vocational) training programs.
3. A program of evening courses, primarily for adults and part-time students.
4. A program of educational and cultural events, such as lectures, concerts and conferences for the benefit of the community-at-large.

B. ENROLLMENT

Projection of the enrollment of the Kauai Community College was based on information relating to high school graduates and their post-high school plans, taken from the 1964 feasibility study, and an application of the national ratio between community college students and the total population to projected population estimates for Kauai.*

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* See Appendix A for details.

The designing capacity of the campus is calculated to be:

DESIGNING CAPACITY

	1966	1967	1968	1969	1970	1975
Full-time Enrollment	175	200	300	350	400	500-550

The increase in enrollment in 1968 is due to the initiation of a comprehensive educational program in that year.

C. CAMPUS LAND AREA REQUIREMENTS

Two major factors are involved in the determination of the land area requirements for the campus: (1) the minimum land requirements of facilities necessary for accommodation of all campus activities; and (2) the operational flexibilities of the facilities and the planned capacity for expansion. The former relates to the functionality of the facilities; the latter to the expandability. Calculation of necessary facility space and allowing for the flexibility factor leads to the determination of the land area requirements summarized below.*

1. Flexibility: 75 per cent use efficiency with a 10 per cent margin for the structures.

2. Land Area Requirements:

a.	Instructional area	10 acres
b.	Administrative area	2 acres
c.	Community area (w/parking area)	6 acres
	Sub-total	18 acres
d.	Circulation area (10% of above)	2 acres
e.	Open areas (buffer zones, landscaped areas, area for other institutional facilities and expansion)	20 acres
	TOTAL CAMPUS LAND AREA REQUIREMENT	40 acres ±

* See Appendix B for details.

Kauai Community College Site Selection Study

N

0 5
Miles

1,300
Hanalei

6,500
Kapaa
Wailua

4,200
Kekaha

Waimea

5,300
Hanapepe

Approximate population center measured along belt highway

6,200
Lihue

4,400
Koloa

Island of Kauai

1960 POPULATION DISTRIBUTION

Robert I. Bush
Planner, A.I.P.

PLATE 1

CHAPTER II

THE POPULATION FACTOR AS A SITE DETERMINANT

A primary characteristic of the Community College will be its "community orientation." The educational programs, especially the technical-vocational and adult education programs, will be responsive to the needs of the community. This "community orientation" makes it desirable to have the college located in or close to a "population center" so that it may serve a maximum number of people conveniently and effectively. In considering these educational-operational factors, it is important to identify the "population center" and its relation to the proposed campus location.

POPULATION DISTRIBUTION

The population distribution pattern of Kauai shows a scattering of the population along the shoreline from Kekaha to Hanalei with a slightly higher concentration located along the south side of the island. The distribution pattern is shown on Plate 1. Data pertaining to each population core are provided in Table I.

TABLE I. POPULATION AND DISTANCE DATA

Location	Distance from Lihue	Population*
Waimea - Kekaha	23 miles	4,200
Hanapepe	17 miles	5,300
Koloa	10 miles	4,400
Lihue	--	6,200
Wailua - Kapaa	6 miles	6,500
Hanalei	37 miles	1,300
TOTAL POPULATION		27,900

In this scattered pattern, it is essential to determine a "population

* U. S. Census 1960.

center." For the purpose of this study, the "population center" can be defined in three ways:

Theoretical Center of Population:	**A point 5.4 miles west of Lihue.**
Major Population Core:	**A location between Lihue and Kapaa.**
Adjusted Center of Population:	**Lihue.**

A. THEORETICAL CENTER OF POPULATION

The "theoretical center of the population" is related to the location of the existing communities with respect to distance and direction from an arbitrarily fixed point. Since the major communities lie on the Kauai Belt Road and the road can be taken as a straight line, the direction element can be neglected. Thus, the "theoretical center of the population" is the balance point for the population cores in relation to the distance from a fixed point along the Kauai Belt Road.

The "theoretical center of the population" is formulated in the following manner:

C Arbitrarily picked point for center of population.

D_c Distance of "theoretical center of population" from C.

P_+ Total Population.

P_i Population of sub-centers. $i = 1, 2, 3, 4, 5, 6$.

D_i Distance from P_i to C.

$$D_c = \frac{(P_1 \times D_1) + (P_2 \times D_2) + (P_3 \times D_3) + (P_4 \times D_4) + (P_5 \times D_5) + (P_6 \times D_6)}{P+}$$

Thus, if: C = 1 mile west of Waimea

Hanalei	P_1 = 1,300	D_1 = 61 miles
Kapaa-Wailua	P_2 = 6,500	D_2 = 30 miles
Lihue	P_3 = 6,200	D_3 = 24 miles
Koloa	P_4 = 4,400	D_4 = 14 miles
Hanapepe	P_5 = 5,300	D_5 = 7 miles
Waimea	P_6 = 4,200	D_6 = 1 mile
	P_+ =27,900	

$$D_c = \frac{(1300 \times 61)+(6500 \times 30)+(6200 \times 24)+(4400 \times 14)+(5300 \times 7)+(4200 \times 1)}{27,900}$$

= 18.6 miles

Since the distances are measured from a point one mile west of Waimea, the "theoretical center of the population" is located 17.6 miles east of Waimea, or 5.4 miles southwest of Lihue.

B. MAJOR POPULATION CORE

While the urbanization pattern of Kauai shows a generally scattered population, three major population groupings or cores are evident. These are:

Lihue-Kapaa (population 12,700)

Koloa-Kekaha (population 13,900)

Hanalei (population 1,300)

The Lihue-Kapaa area, composed of two population cores, is located at the approximate geographical center of the Kauai Belt Road. If the campus is located somewhere between these population cores, it will be highly accessible to 45.5 per cent of the total population of Kauai. Using this method, the suitable campus site is determined to be a location near the Wailua River.

C. ADJUSTED CENTER OF POPULATION

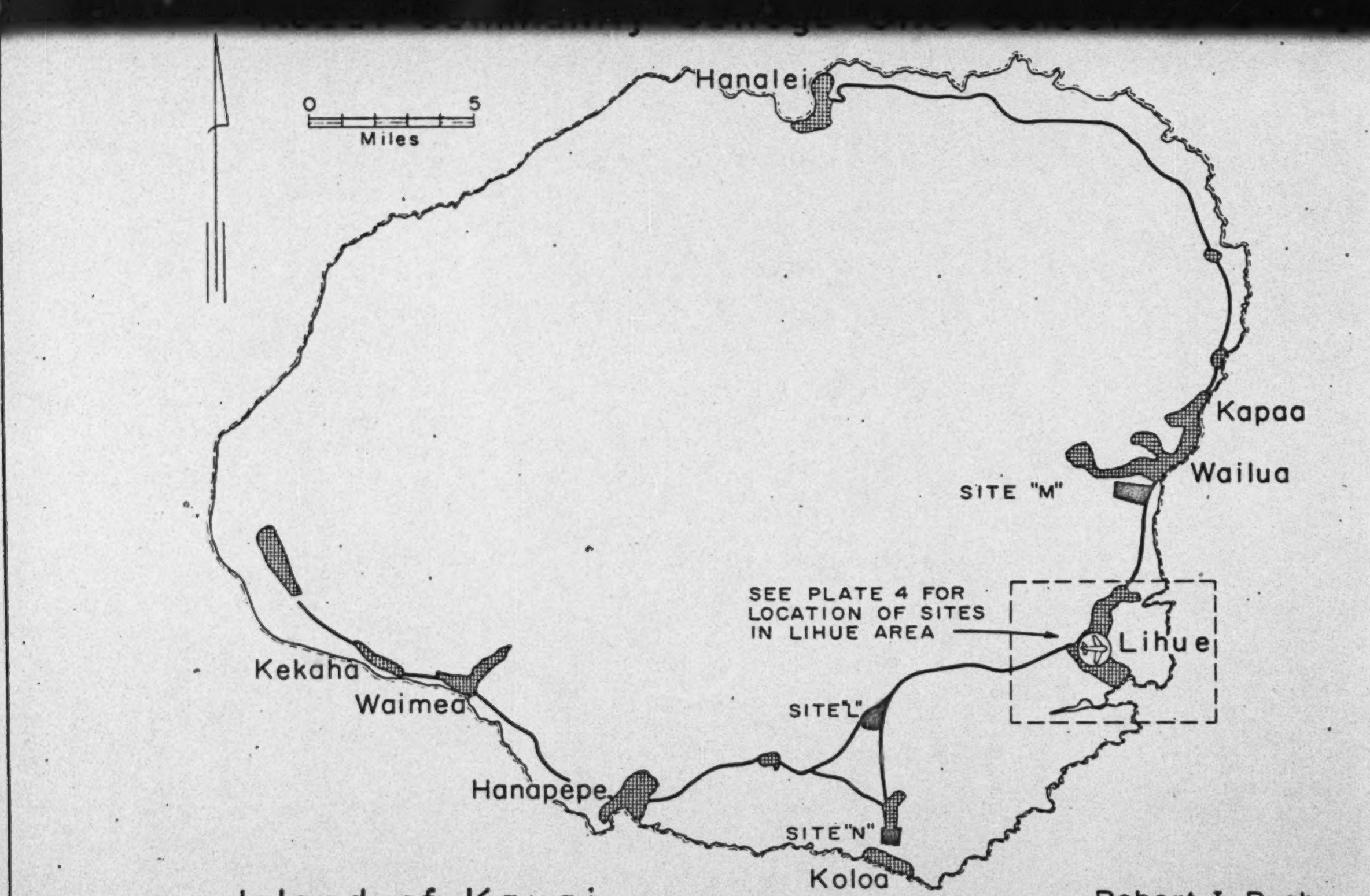
This approach involves a consideration of sociological factors and the availability of public facilities and activity centers which would meet certain institutional needs. An example of facilities and the specific advantages each provides is listed.

Facility	Advantages
Library	Provides students with a complementary or supplementary information source.
Auditorium	Provides space for group gatherings, such as graduations, cultural presentations, etc.
Civic Center	Provides school administrators with the means for close contact and day-to-day coordination with government agencies.
Commercial Development	Provides general services for faculty and students.

Other benefits derived from the location of the campus near these facilities are:

1. Facility requirements for the campus are reduced and subsequently a savings on construction costs results.
2. Time and effort are saved in administrative coordination with other governmental agencies.
3. Service facility requirements for the campus, such as a student center, may be reduced with subsequent savings on construction costs.

In addition, the community traveling routes to commercial areas have to be considered to insure adequate public exposure and easy and convenient access to the campus site. Since the facilities and activities noted are presently concentrated in downtown Lihue, suitable sites in this grouping need to be within the confines of Lihue.

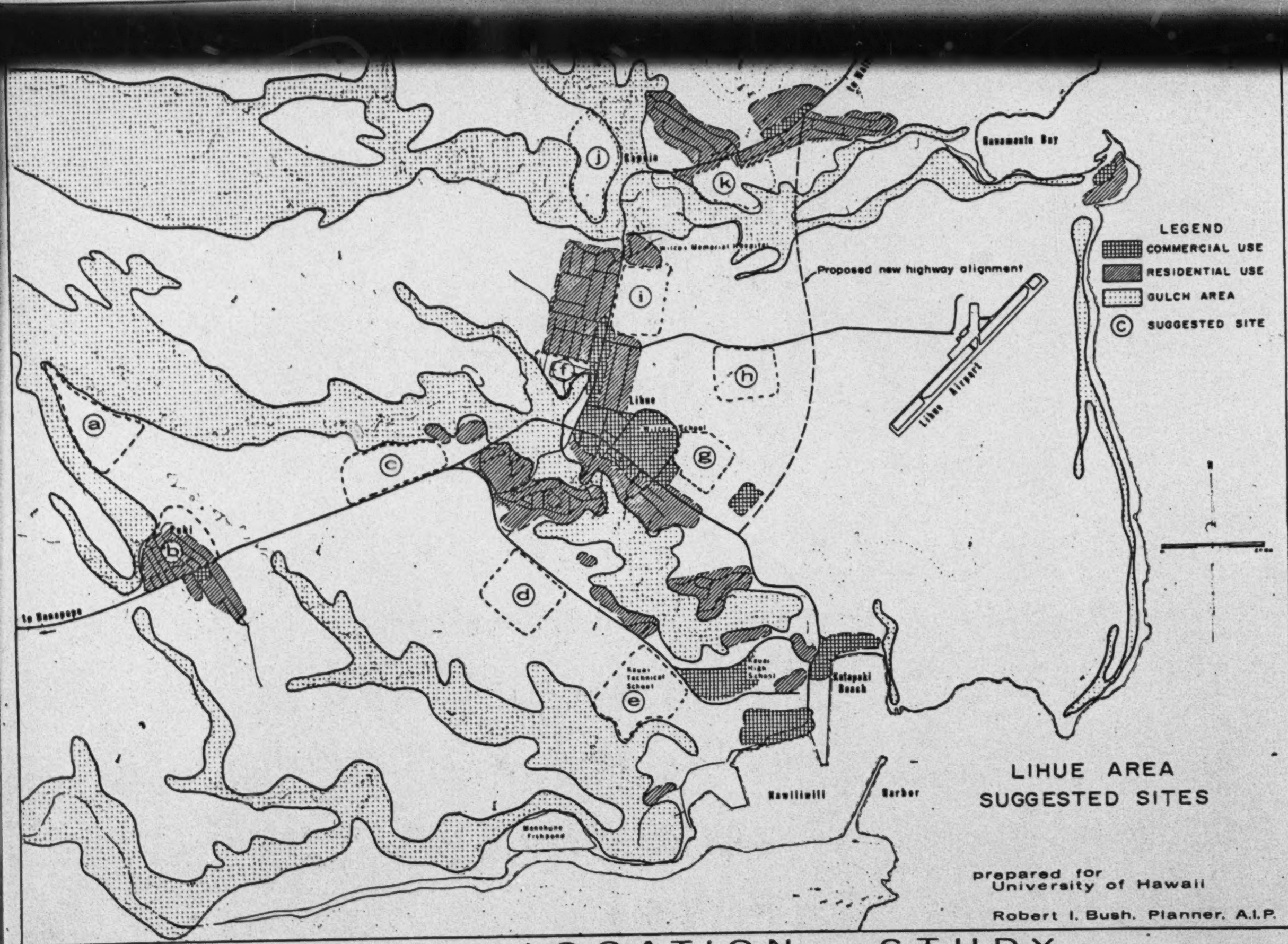


Island of Kauai

SUGGESTED CAMPUS SITES

Robert I. Bush
Planner, A.I.P.

PLATE 2



SITE LOCATION STUDY

KAUAI COMMUNITY COLLEGE

PLATE 3

CHAPTER III

SITE SELECTION

PRELIMINARY SCREENING OF SITES

A. SUGGESTED SITES

Fourteen sites were initially suggested as generally fulfilling the size, environment and adaptability requirements set for proposed campus sites. (See Plates 2 and 3.)

SITE A (MAUKA-PUHI SITE)	50+ acres owned by the Grove Farm, Inc. Tax key 3-4-05, portion of parcel 3. Located 0.5 miles northwest of the Puhi Camp Site.
SITE B (PUHI CAMP SITE)	50+ acres owned by the Grove Farm, Inc. Tax key 3-4-05, portion of parcel 3. The former Puhi Camp, located approximately 3 miles from Lihue.
SITE C (L.P. MANAGER HOUSE SITE)	40 acres owned by the Lihue Plantation Co. Tax key 3-8-05, portion of parcel 3. Located adjacent to the Lihue Plantation Manager's house.
SITE D (CASE HOUSE SITE)	50+ acres owned by the Grove Farm, Inc. Tax key 3-3-03, portion of parcel 1. Located mauka of the Case house, fronting Wilcox Road.
SITE E (KAUAI TECH. SITE)	50+ acres owned by the Grove Farm, Inc. Tax key 3-3-03, portion of parcel 1. Located on the west side of Wilcox Road, directly opposite from the existing Kauai Technical School.
SITE F (LIHUE TOWN SITE)	30+ acres owned by the Lihue Plantation Co. Tax key 3-8-04, portion of parcel 1. Former Lihue Camp Site.
SITE G (LIHUE SITE 1)	40+ acres owned by the Lihue Plantation Co. Tax key 3-6-02, portion of parcel 1. Located opposite the Lihue War Memorial Auditorium on Kalena Drive.
SITE H (LIHUE SITE 2)	40+ acres owned by the Lihue Plantation Co. Tax key 3-6-02, portion of parcel 1. Located on the mauka side of the reservoir on Airport Road.
SITE I (HOSPITAL SITE)	40+ acres owned by Lihue Plantation Co. Tax key 3-7-01, portion of parcel 1. Located adjacent to the Wilcox Hospital.
SITE J (CEMETERY SITE)	40+ acres owned by Lihue Plantation Co. Tax key 3-8-03, portion of parcel 1. Located adjacent to the Kapaia Cemetery on the Wailua Falls Road.

SITE K (HANAMAULU SITE)	40+ acres owned by the Lihue Plantation Co. Tax key 3-7-01, portion of parcel 1. Located adjacent to the Hanamaulu subdivision.
SITE L (KOLOA TRIANGLE SITE)	40+ acres owned by the Knudsen Estate and others. Tax key 2-7-02, portion of parcel 1. Located at the intersection of Kauai Belt Road and Koloa Road.
SITE M (WAILUA SITE)	100+ acres owned by the State of Hawaii. Tax key 3-9-02, portion of parcel 12. Located directly makai of the Kalepa Forest Reserve, above Wailua River.
SITE N (KOLOA SITE)	50+ acres owned by the Grove Farm Co. Tax key 2-9-02, portion of parcel 1. Located near the reservoir, mauka of Koloa Mill.

B. GROUPING IN "POPULATION CENTER" CATEGORIES

The fourteen sites were grouped, according to their locations, under one of the three definitions of "population center."

GROUP I CENTER OF THEORETICAL POPULATION

SITE A Mauka Puhi Site

SITE B Puhi Camp Site

SITE C Lihue Plantation Manager's House Site

SITE D Case House Site

SITE E Kauai Technical School Site

SITE L Koloa Triangle Site

SITE N Koloa Site

GROUP II MAJOR POPULATION CORE

SITE J Cemetery Site

SITE K Hanamaulu Site

SITE M Wailua Site

GROUP III ADJUSTED CENTER OF POPULATION

SITE F Lihue Town Site

SITE G Lihue Site 1

SITE H Lihue Site 2

SITE I Hospital Site

C. SCREENING CRITERIA

The following criteria were used to initially screen the suggested sites:

Accessibility
Environment
Economy in Development
Possibility for Future Expansion

The first two items are key elements in determining the serviceability and the qualitative aspects of the campus. The third and fourth items relate generally to the developability characteristics of the campus site. These four elements are critical factors, and negative characteristics of a site with respect to any one of the items will create serious problems in the future development of the campus and the operation of the college on that site.

Definitions of grades used in evaluating the sites are provided below:

1. Accessibility

"A"	GOOD	Fronting more than one public road. Free flow of traffic to the site.
"B"	FAIR	Less than one mile distance from a public road.
"C"	POOR	More than one mile distance from a public road.

2. Environment

"A"	GOOD	Open area agricultural area; residential and small scale commercial use areas free from other obstructions.
"B"	FAIR	Resort area; light industry area; large scale commercial area; high school area.
"C"	POOR	Heavy industry; airport approach pattern, etc.

3. Economy in Development

"A"	GOOD	Utilities available on the site; not more than a 10 per cent grade; favorable soil conditions.
"B"	FAIR	Utilities available within one mile radius; not more than a 15 per cent grade; local drainage problem; future utilities service planned.
"C"	POOR	Utilities not available within one mile radius; more than a 15 per cent grade; unfavorable soil conditions; critical overall drainage problems.

4. Possibility for Future Expansion

"A" GOOD More than 40 additional acres available.

"B" FAIR More than 20 additional acres available.

"C" POOR No additional land available.

D. RESULTS OF PRELIMINARY SCREENING

Application of the evaluation criteria led to the following results:

GROUP I

Site	Accessibility	Environment	Economy	Expandability
A Mauka Puhi Site	C	A	C	A
B Puhi Camp Site	A	A	B	A
C L.P. Manager's Hse Site	A	B	B	C
D Case House Site	A	C	B	A
E Kauai Tech School Site	A	C	C	A
L Koloa Triangle Site	A	A	C	A
N Koloa Site	C	A	C	A

GROUP II

J Cemetery Site	B	A	C	A
K Hanamaulu Site	A	A	C	C
M Wailua Site	B	A	B	A

GROUP III

F Lihue Town Site	A	B	C	C
G Lihue Site 1	B	B	A	B
H Lihue Site 2	A	A	C	B
I Hospital Site	A	A	A	A

The most suitable sites in each "population center" grouping were determined to be:

GROUP I THEORETICAL CENTER OF POPULATION
SITE B Puhi Camp Site

GROUP II MAJOR POPULATION CORE
SITE M Wailua Site

GROUP III ADJUSTED CENTER OF POPULATION
SITE I Wilcox Hospital Site

DETAILED ANALYSIS OF THE THREE SITES

Further analysis of the suitability of the three sites was carried out in accordance with the following program:

1. Re-examination of traffic characteristics
2. Re-analysis of environmental elements
    a. Land use of surroundings
    b. Internal texture of surroundings
    c. Serviceability
3. Analysis of Cost of Development
    a. General developability
    b. Off-site construction and its estimated cost
    c. Other cost factors
4. Re-analysis of expandability
    a. Estimated land value
    b. Ownership pattern
    c. Status of surrounding developments

A. SITE B - PUHI CAMP SITE

The Puhi Camp Site consists of approximately 25 acres of "plantation camp" land and 25 acres of canefield land. It is located approximately 2.5 miles west of Lihue. The site fronts on the Kaumualii Highway (Kauai Belt Road) and is located mauka of the highway.

1. Topography
    a. 5-10 per cent grade
    b. Irrigation ditch and reservoir located in the middle of the property.

This site has great possibilities as a campus site. The irrigation ditch can be designed so that it will be of aesthetic value.

2. Existing Improvements

a. 50-60 living units with accessory buildings.

b. Partially paved roads, 15 to 25 feet in width, for auto and pedestrian circulation.

c. Private water system for domestic use

d. Individual cesspool for sewage treatment

Relocation of the existing plantation camp is not scheduled until the early 1970's. This time factor becomes a problem if immediate development of a campus is desired. However, adjacent parcels are available for immediate limited-scale development.

In addition, the internal texture of the camp is very substandard. The water supply is dependent upon a private source, Grove Farm, Inc., and the cesspool system provides for sewage disposal. Site preparation providing for these basic utilities may be very costly compared to sites which already have these basic utilities.

Upon detailed analysis, this site is recommended as a secondary site to be considered only if more suitable sites are not available. This is primarily because of the critical time factor and the inadequacy of utility services. Distance from the "theoretical population center" is also a consideration.

B. SITE M - WAILUA SITE

The Wailua Site is located approximately five miles east of Lihue. It is in the center of the two largest population cores of the island and approximately 10-11 miles from the "theoretical center of the population."

The Department of Land and Natural Resources of the State is planning a resort development in the area along the makai side of the proposed site. A marina for small boats along the Wailua River is under construction.

KUHIO HIGHWAY
TO LIHUE
KAUAI COMMUNITY COLLEGE
RESORT DEVELOPMENT
100
60
90

The proposed site is approximately 2,000 feet mauka of the proposed resort subdivision and directly above the marina development.

1. Re-examination of Traffic Characteristics

   a. Ingress and egress from Kauai Belt Road

      There is a major "cane-haul" road running directly mauka of Kauai Belt Road which causes very serious ingress and egress problems. However, there is a free access point on the Highway near the Wailua River. This access point will not disrupt the cane hauling operation; yet, the distance from the Wailua Bridge (about 200') may be a source of difficulties with respect to the construction of an access facility.

   b. Turning movement

      The existing traffic volume along the highway is light, and left-turn movements are not anticipated to be hazardous. When the actual volume reaches the maximum designing volume of the highway, it is recommended that one or all of these traffic control devices be instituted:

      1) Proper channelization of the intersection.

      2) Reduction of the speed limit

      3) Installation of traffic control lights

2. Re-analysis of Environmental Elements

   a. Land use: Sugar cane cultivation

   b. Internal texture: No existing development

   c. Serviceability

      The site is surrounded by prime sugar cane land overlooking the Lydgate Park resort development and the Wailua River. An unobstructed view in all directions from this site provides considerable aesthetic benefits. The site will be a part of the

320± acres of state land scheduled for development.

Major objections to this site are:

1) The five miles separating the site from Lihue may be considered as too great a distance for leeward residents.

2) The evening program enrollment may be negatively affected by the location of the campus in the middle of cane-cultivated lands.

3) The relative isolation from existing community activities (Lihue being the center of community activities).

Obviously, the development of a "community college town" is essential for full development of the campus. But then the question arises whether such a "town" can be supported.

3. Analysis of Development Cost

a. General developability characteristics

The site is located on a hillside with very suitable soil conditions for construction and landscaping. There is a small drainage canal in the middle of the site which can be converted into part of a general sheet flow drainage system. Construction of a building may require six to eight times more earth-moving work as compared to sites with grades of 0-2 per cent.

b. Off-site construction

The estimate for off-site development costs is based on current prices.

1) Access road

An access road shall be constructed from a point 200 feet west of the Wailua Bridge to the proposed campus site. General specifications and the approximate cost of construction is determined to be:

a) Total length 3200 ft.
b) Width of R/W 60 ft.
c) Width of pavement 40 ft.
d) Utilities to be constructed w/road
Sewer - manholes
Water - hydrants
Drainage
e) Sidewalk and gutter 4 ft. wide

Total Access Road Cost ($75 ln. ft.). $240,000

2) Water supply system (not included above)

It is recommended that a reservoir of one million gallon capacity be constructed at ground elevation 300± ft. An estimated cost for all the water network for the site is:

a) Reservoir w/booster pump	$225,000
b) Water main (8" main) - 450'	52,000
c) Other apparatus - lump sum	50,000

Total Off-site Water. $327,000

3) Sewer and drainage systems

Cost of the sewer and drainage systems is included in the construction cost of the access road.

Extra drainage consideration - intersecting ditch - 200' . . . . . $ 12,000

4) Other cost factors

No acquisition costs

TOTAL COST, IMPROVEMENT AND ACQUISITION. $579,000

Re-analysis of Expandability

a. Land value: Available without cost

b. Ownership: State of Hawaii

c. Status of surrounding land: The 320 acres of state land have been leased to Lihue Plantation Company for cane cultivation.

The size and shape of the campus can be very flexible. The conditions noted above allow extreme freedom in the planning of the campus.

KUHIO HIGHWAY
40 ACRES
AIRPORT ROAD
EXPANSION
448
200
TO LIHUE AIRPORT
200

C. SITE I - HOSPITAL SITE

The Hospital Site is centrally located in the Lihue urban core. There is frontage on Kuhio Highway (Kauai Belt Road) between the intersection of Airport Road and the Wilcox Hospital. The site is approximately 5.4 miles from the "theoretical center of population." The land is presently owned by Lihue Plantation Company and is used for sugar cane cultivation.

1. Re-examination of Traffic Characteristics

The traffic volume on Kuhio Highway at this point is the highest in Kauai. The traffic flow is of a typical semi-urban type with mixed traffic--a 25 MPH speed limit, and many turning movements from the highway to individual driveways.

Since a cane-haul road is located on the south side of the property, it is not desirable to seek an access to the Airport Road. Therefore, Kuhio Highway will be the major access road to the campus.

Traffic control devices recommended for the access point are:

a. Increasing the right-of-way of the section of Kuhio Highway fronting the property from an existing 50' to at least 100'.

b. Installing a medial strip with provisions for left turn movement.

c. Fixing the point of access at approximately the middle of the block with proper channelization.

2. Re-analysis of Environmental Elements

a. Land use

The site is bordered on three sides by developed areas. The Wilcox Memorial Hospital lies on the north side; residential areas on the south and west sides. Sugar cane land borders the east side of the site.

b. Internal texture of surroundings

The internal texture of these two areas are very compatible and well organized. A cane-haul road runs along the south or lee-ward side of the site. A small scale business area and a new single-family subdivision which forms the core of the urbanized pattern of Lihue also lie on the south side. The business area is not a well-organized development. However, there are a few stores which could serve the students' needs.

c. Serviceability

Considering the factors above and the availability of the existing cultural and civic facilities, this Site is highly acceptable as a campus site. Furthermore, the County of Kauai is planning to locate a stadium nearby. Any cooperative planning of both the college campus and the stadium is highly desirable.

3. Analysis of Development Cost

a. General developability characteristics

The site is nearly flat with a gentle 2 per cent grade. Soil conditions are very suitable for construction and landscaping. There is good sheet flow drainage and no difficulties are anticipated with respect to surface water flow. Construction of facilities will not require any special mass grading.

b. Off-site construction

1) Access

Access will be directly from Kuhio Highway (Kauai Belt Road). Some channelization and paving of the highway will be required.

Specifications for necessary improvements:

a) Total length of paved area	1500 ft.
b) Width of R/W	24 ft.
c) Utilities to be constructed w/road	
Sewer - manholes	
Water - hydrants	
Drainage	
d) Sidewalk and gutter	4 ft. wide

Estimated cost of improvements:

a) Paved areas ($56 ln. ft.)	$84,000	
b) Channelization and other accessories	10,000	
Total Access Improvements		$94,000

2) Water supply system

Water main available.

3) Sewer and drainage system

The cost of the sewer and drainage system is included in road construction costs. However, additional expenses will be incurred for expansion of some existing facilities. Cost of improvement is estimated to be $2.50 ln. ft.

c. Other cost factors

Land acquisition

The 12 acres of land adjacent to Kuhio Highway are zoned for urban use. The value of land is estimated to be approximately $16,000/acre.

The other 28 acres are zoned for agricultural use with an estimated value of $4,000/acre.

Urban zoned parcel:		
$16,000 x 12 =	$192,000	
Agricultural zoned parcel:		
$4,000 x 28 =	112,000	
Total Acquisition Cost (Parcel 1)		$304,000

If land cost is very critical, it is recommended that the proposed campus site be shifted approximately 700 feet in the makai direction in order to exclude the 12 acres of urban zoned land.

The cost of acquisition will then be:

$4,000 x 40 =	$160,000	
Total Acquisition Cost (Parcel 2)		$160,000
Added cost for a necessary access road ($75 ln. ft.)		52,500

TOTAL IMPROVEMENT AND ACQUISITION COSTS:

1) Parcel with Kuhio Highway frontage

Access road w/utilities	$ 94,000	
Water available w/o cost	--	
Land acquisition	304,000	
TOTAL COST (PARCEL 1 - KUHIO HWY FRONTAGE). . .		$398,000

2) Parcel located 700' makai of Kuhio Highway

Access road w/utilities	$ 94,000	
Additional access facilities	52,500	
Water available w/o cost	--	
Land acquisition	160,000	
TOTAL COST (PARCEL 2 - 700' MAKAI OF KUHIO HIGHWAY)		$306,500

COMPARISON OF THE WAILUA SITE AND THE HOSPITAL SITE

These two sites have positive and negative characteristics with respect to different elements. The following list summarizes the results of the analysis.

ITEM	WAILUA SITE	HOSPITAL SITE
Accessibility	1. Access available from public road.	1. Fronting public road.*
	2. Access road: 3200'.	2. No access road required.*
	3. No widening required.	3. Widening of Kuhio Hwy.
	4. Rural-type traffic.	4. Urban-type traffic.

* Hospital Site Parcel 1.

ITEM	WAILUA SITE	HOSPITAL SITE
Environment	1. Open field without any development	1. Acceptable urban texture.
	2. 11.0 miles from "theoretical center of population."	2. 5.4 miles from "theoretical center of population."
	3. Possible psychological resistance by the leeward Kauai community because of the distance.	3. Favorable response by the communities.
	4. Questionable serviceability for evening programs.	4. Serviceability for all programs.
Economy	1. 6-8 times more grading necessary for building padding.	1. Little or no earth work for building padding.
	2. Development costs:	2. Development costs:
	Traffic Circulation $240,000	Parcel 1 $ 94,000
	Utility 339,000	Parcel 2 (146,500)
	Land --	Negligible --
		Parcel 1 304,000
		Parcel 2 (160,000)
	Total: $579,000	Parcel 1 $398,000
		Parcel 2 ($306,500)
Expandability	1. Land available without cost.	1. Land need be purchased.
	2. Single owner: State of Hawaii	2. Single owner: Lihue Plantation Company
	3. Zoned for agricultural use.	3. Zoned for agricultural urban use.*

* Hospital Site Parcel 1.

CHAPTER IV
CONCLUSION

On the basis of this study the Wilcox Hospital Site in Lihue is recommended as the campus site of the Kauai Community College. The Wailua Site is recommended as the second choice.

The recommendation is based on the following considerations:

1. The unavailability of the Puhi Camp Site for immediate use and the lack of adequate utility services make it a secondary site.
2. The fact that the advantages of the Wailua Site are also possessed by the Hospital Site.
3. The fact that the Wailua Site possesses some negative characteristics:
   a. The distance from the leeward areas in which 20,100 people or 71 per cent of Kauai's total population live.
   b. The questionable serviceability for evening programs on the campus.
   c. The high cost of off-site development, which exceeds the total cost of land and off-site development of the Hospital Site ($180,000 to $270,000).
   d. While part of the Wailua parcel can be developed as a residential area and funds resulting from the sale of land utilized to offset the off-site development costs, there seems to be no indication of any great demand for housing in this area in the near future. This conclusion is based upon a study of the conditions of Kauai community and its development pattern of 1965-66.*

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* State of Hawaii, State General Plan. (Not yet published.)
County of Kauai, Land Use Survey. (Not yet published.)

The Wailua Site, as the second choice, has some characteristics which may be advantageous in the long range development policy. These advantages are as follows:

1. Since the land is owned by the State of Hawaii, a Master Plan for the total 320 acres can be established and enforced by the state government, and the campus may be designed in an ideal environment.
2. The high cost of off-site developments can be made up if the state develops the surrounding land for various uses and sells land to the public.
3. This development can be oriented to a college-town type of urbanization.
4. The development can be coordinated with the long range program of the State of Hawaii.

These four elements are based on aspects of assumptions regarding future population movements in Kauai.

1. A strong indication of an intensive population movement to the windward side in the long range population projection.
2. The possibility of a radical stimulation of the economic base in windward Kauai.
3. The suggestion that the intensity of the population movement and possible economic stimulation may outweigh the total leeward growth potentiality.

It should be pointed out, however, that these three elements <u>are not</u> pure planning elements, since they depend on administrative and political decisions and represent a change from the overall normal development pattern of the island of Kauai. An intensive study should be made with the State General Plan as base.

Upon critical analysis of suitable sites, using available information and the criteria outlined in previous chapters, the Wilcox Hospital Site in Lihue is recommended as the campus site for the Kauai Community College.

APPENDIX A

ENROLLMENT PROJECTIONS

Two basic methods have been used acknowledging different elements affecting enrollment. The sources and qualifying elements are outlined below.

METHOD A BASED ON HIGH SCHOOL SENIORS

1. 31.5 per cent of the high school graduates will be community college freshmen, according to the survey in the 1964 feasibility study.
2. The projection for the high school graduates is based upon the highest retention rate.
3. The projection was confirmed by the Department of Education projection.
4. The projection was re-confirmed by an IBM analysis through the identification of the "growth curve."

METHOD B BASED ON GENERAL POPULATION GROWTH

1. Based upon the trends in other states, the ratio of community college students to the general population is determined to be 1:75.
2. The population projection of Kauai is taken from a population study by the Department of Planning and Economic Development, State of Hawaii.

The results of the two methods are:

ENROLLMENT PROJECTION BASED ON METHOD A

Full-time Students	1966	1967	1968	1969	1970	1975
Full-time Students	191	204	272	350	399	556
Total Enrollment (Including Part-time and Evening Students)	221	237	353	438	513	600

ENROLLMENT PROJECTION BASED ON METHOD B

	1966	1967	1968	1969	1970	1975
Full-time Students	---	---	338	---	340	522

Using this information and considering construction speed, administrative co-ordination and other operating elements, guides relation to the designing capacity of the campus are formulated. The designing capacity is subsequently calculated to be:

DESIGNING CAPACITY

	1966	1967	1968	1969	1970	1975
Full-time Students	175	200	300	350	400	500 - 550

The sudden increase in 1968 is due to the initiation of the comprehensive educational program in that year.

APPENDIX B

TOTAL LAND REQUIREMENT

In order to determine the land area requirements, the usage of each facility and the related activities in the proposed campus site need to be considered. The usage factors are:

A maximum projected enrollment of 550 full-time students in 1975, with the possibility of an increase after 1975.

Community usage of some of the facilities, such as the theater and library.

Extensive auto circulation and parking area requirements brought about by the lack of an intensive mass transit network.

Inclusion of open space for unpredicted future expansion.

Upon the consideration of these basic elements and the educational requirements, the physical facilities and land area requirements for the campus were formulated.

TYPE AND QUANTITY OF STRUCTURES*

1. Instructional Areas

Type	Quantity
Classroom Buildings (including laboratories)	2 - 3
Shops	3 - 4
Library	1
Physical Education Facility	1

2. Administrative and Other Areas

Type	Quantity
Administrative Building	1
Campus Center	1
Utility Building	1

* This list serves only as a guide to determine the approximate land area needs of the campus. It does not delineate the final composition of the structures.

3. Community Area

Type	Quantity
Theater and surrounding area	1
4. Parking	400 stalls

B. LAND AREA REQUIREMENTS FOR FACILITIES

The standard space requirements for the buildings are tentatively set through the use of certain published standards.

Regular instructional area	50 sq. ft./student
Laboratory	40 sq. ft./student
Library	10 sq. ft./student
Administration	10 sq. ft./student
Physical education facility	10 sq. ft./student
Campus center	10 sq. ft./student
Shop buildings	5,000 sq. ft./shop
Theater and surrounding area	2.5 acres
Parking: 350 sq. ft./car, 400 spaces	3.2 acres
Circulation	10% of total

The ratio of the building area to land area required for building is 20 per cent of 1:5. Enrollment is fixed at 550 FTE.

1. Instructional Area

a. Classroom building	27,500 sq. ft.	
b. Laboratories	22,000 sq. ft.	
c. Library	10,000 sq. ft.	(5,500 - student use) (4,500 - community use)
d. Shops	20,000 sq. ft.	
e. P. E. building	5,500 sq. ft.	
TOTAL BUILDING AREA	85,000 sq. ft.	

LAND AREA FOR INSTRUCTIONAL AREA:

$\frac{(85,000 \times 5)}{43,560} = 9.75$ acres — 10 acres

2. Administrative Areas

a. Administrative building	5,500 sq. ft.	
b. Campus center	5,500 sq. ft.	
c. Utility building	3,000 sq. ft.	
TOTAL BUILDING AREA	14,000 sq. ft.	
LAND AREA FOR ADMINISTRATION AND OTHER AREAS:		
$\frac{(14,000 \times 5)}{43,560}$ = 1.6 acres		2 acres

3. Community Area

a. Theater and surrounding	2.5 acres	
b. Parking area	3.2 acres	
LAND AREA FOR COMMUNITY AREA	5.7 acres	6 acres

C. TOTAL LAND REQUIREMENT

Total land area required for facilities:	
(a + b + c) = 10 + 2 + 6 =	18 acres
Circulation areas: 10% of land area = 1.8	2 acres
SUB-TOTAL	20 acres
Open areas (buffer zones, landscaped areas, area for other institutional facilities and expansion)	20 acres
TOTAL	40 acres ±